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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:

Raymond C. Edmonds

Application No.: 09/473,598

Filed: December 29, 1999

For: INTELLIGENT DISPLAY INTERFACE

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) Examiner: Abdulselam, Abbas
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) Art Unit: 2674
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SUPPLEMENTAL APPEAL BRIEF

Mail Stop Appeal Brief - Patent
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Applicant requests reinstatement of Appeal pursuant to 37 C.F.R. §1.193(b)(1)(ii). Applicant submits the following Supplemental Appeal Brief pursuant to 37 C.F.R. §1.192(c) for consideration by the Board of Patent Appeals and Interferences. Should any charges be required, please charge any additional amount due or credit any overpayment to deposit Account No. 02-2666.

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I. REAL PARTY IN INTEREST

Raymond C. Edmonds, the party named in the caption, transferred his rights to that which is disclosed in the subject application through an assignment recorded on December 29, 1999 (010489/0532) in the patent application to Intel Corporation, of Santa Clara, California. Thus, as the owner at the time the brief is being filed, Intel Corporation, of Santa Clara, California is the real party in interest.

II. RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences which will affect or be affected by the outcome of this appeal.

III. STATUS OF CLAIMS

Applicant requests entry of the attached amendment to cancel Claims 34-43, per 37 C.F.R. §41.33(b). Hence, Claims 1-3, 5, 10-13, 15-22, 24 and 26-33 are pending and rejected in this application. Applicant hereby appeals the rejection of all pending claims.

IV. STATUS OF AMENDMENTS

The claims are amended in accordance with the Response Amendment filed on April 19, 2004, wherein Claims 1-3, 5, 22, 24 and 26 were amended and Claims 28-43 were added. The claim amendments requested in the Response Amendment filed on April 19, 2004 was entered. Furthermore, Applicant requests entry of the attached amendment to cancel Claims 34-43, per 7 C.F.R. §41.33(b).

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

The pending claims relate to an intelligent display interface. Independent Claim 1 recites a method that includes the identification, by a video controller 22, of an updated portion of first image data that has changed since the previous transmission to a first display device 26, as shown in FIG. 1. The first updated portion is transmitted to the first display device 26 from video controller 22. The video controller also identifies a second updated portion of second video image data that has changed since the previous transmission to a second display device 28 and transmits the second updated portion of second video image data from the video controller 22 to the second display device 28. (*See*, Applicant's Specification, pg. 4, lines 17-21.)

As described in Applicant's specification, and in contrast to conventional handling of changes to a displayed image:

controller 22 may transmit only those portions of the first image that have changed since the previous transmission to device 26, and transmit only those portions of the second image that have changed since the previous transmission to

device 28. Under these conditions, the bandwidth needed on communications channel 24 is decoupled from the refresh rate (how many times per second the image must be refreshed), and instead is tied to how much of the image must be modified, how often it must be modified, and how many images are sharing the channel. (*See*, Applicant's specification, pg. 4, line 19 - pg. 4, line 3.)

In the embodiment described at pg. 9, final paragraph, the first displayed image in the first display device 26 is refreshed from a first video memory 27 of the first display device 26, as recited by dependent Claim 2. As further described at pg. 4, lines 2-4 of Applicant's Specification, the first and second portions, which are transmitted over the shared communications channel, are formatted differently, as recited by dependent Claim 10.

As recited by dependent Claim 12, the first and second portions may include addresses to identify the first video device and the second video device. (*See*, Applicant's Specification, pg. 5, lines 11-20.) As described in Applicant's specification:

The addressability of display devices 26, 28 allows all transmissions to devices 26, 28 (and additional devices if implemented) to take place over the same communications channel. Since each display device imposes a smaller bandwidth requirement on the communications channel than is normally required, multiple display devices can share a single channel without increasing the bandwidth requirements normally imposed by a single device. This is true regardless of whether the communications channel is in the form of a bus, a cable, a radio channel or some other form. This also permits a single port from the graphics controller to interface with multiple display devices, reducing the cost and space requirements of the graphics controller. (*See*, Applicant's Specification, pg. 5, lines 11-28.)

Independent Claim 22 recites a system 21, which includes a shared communications channel 24, a first display device 26 and a second display device 28 coupled to the shared communications channel, as shown in FIG. 1. As illustrated, the first display device 26 and the second display device 28 include a first video memory 27 and a second video memory 29, respectively. (*See*, Applicant's Specification, pg. 3, final paragraph.)

As shown in FIG. 1 of Applicant's Specification, a video controller 22 coupled to the shared communications channel 24 transmits an identified first updated portion of first video image data that has changed since a previous transmission to the first display device 26 over the shared communications channel 24 to the first display device 26. As further shown, the video controller 22 transmits an identified second updated portion of second video data that has changed since a previous transmission to the second display device 28 over the shared communications channel 24 to the second display device 28. (*See*, Applicant's Specification, pg. 4, lines 17-21.)

As illustrated in FIG. 3 of Applicant's Specification, the first display device 26 includes a first address decoder 32 to decode a first device address associated with the first updated portion of first video image data received over the shared communications channel 24. As further shown, the second display device 28 includes a second address decoder 32 to decode a second device address

associated with the second updated portion of second video image data received over the shared communications channel 24. (See, Applicant's Specification, pg. 6, lines 5–10.)

As further recited by dependent Claim 30, the first display device 26 may include an interface 23 coupled to the shared communications channel 24 and a video memory 27 coupled to the interface 23. (See, Applicant's Specification, pg. 4, lines 1-4.) As illustrated with reference to FIG. 3 of Applicant's Specification, if an address associated with an updated portion of video image data received over the shared communications channel 24 matches an address of the first display device 26, interface 23 updates video memory 27 with the updated portion of video image data. As further shown with reference to FIG. 3, a control circuit 30 refreshes a displayed image in the first display 26 from the first video memory 27. Analogous features are also recited by dependent Claim 32.

Independent Claim 34 recites a method including detection by display device (26, 28) of an updated portion of video image data received over a shared communications channel 24. As further described, a video memory of the display device (26, 28) is updated if an address associated with the updated portion of video image data matches a display device address. Once the video memory is updated, a displayed image in the display device (26, 28) is refreshed from the video memory (27, 29). (See, Applicant's Specification, FIG. 4 and pg. 9, lines 14-22.)

Independent Claim 39 recites a display device (26, 28), which includes a video memory (27, 29) and an interface (23, 25) coupled to the video memory (27, 29). (See, Applicant's Specification, pg. 4, lines 1-4 and lines 17-21.) As described, the interface (23, 25) detects an updated portion of video image data received over shared communications channel and updates the video memory (27, 29) if an address associated with the updated portion of video image data matches a display device address. As further shown with reference to FIG. 3, a control circuit 30 refreshes a display image in the displayed device (26, 28) from the video memory (27, 29). (See, Applicant's Specification, pg. 6, lines 5-16.)

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The grounds of rejection involved in this appeal are as follows:

Are Claims 1, 2 and 12 unpatentable under 35 U.S.C. §102(b) as being anticipated by Nobumasa et al., Japanese Publication No. 55-009276 ("Nobumasa")?

Are Claims 1 and 2 unpatentable under 35 U.S.C. §102(b) as being anticipated by Dye, U.S. Patent No. 4,965,559 ("Dye")?

Are Claims 3, 5 and 10-13 unpatentable under 35 U.S.C. §103(a) as being unpatentable over Dye in view of Hampel et al., U.S. Patent No. 6,310,814 ("Hampel")?

Are Claims 15-22, 24 and 26-33 unpatentable under 35 U.S.C. §103(a) as being unpatentable over Dye in view of Knox et al., U.S. Patent No. 6,323,854 ("Knox")?

VII. ARGUMENT

A. Overview of the Cited References

1. Overview of Nobumasa Reference

Nobumasa describes a display unit consisting of a plurality of CRT's, each CRT to display an arbitrary graphic portion of a geographic area, such that the plurality of CRTs collectively display the entire geographic area. (See, Abstract.) As described by Nobumasa, the purpose of Nobumasa is:

to enable to display in the form of flexibility for broader graphic area as a whole, by displaying arbitrary graphic area on each CRT of the display unit consisting of a plurality of CRTs in common use of the control section. (See, Abstract.)

As described by Nobumasa, the display of the portion of the broader geographic area on CRTs.17 (17-1, 17-2, 17-3, 17-4) is determined by device controller 11. As explicitly recited by Nobumasa:

The device controller 11 performs control for the CRT's 17-1 . . . 17-4, memorizes video information by storing such information with the picture memory 13 and stores the address of the memory 13 to the picture memory address circuit 12. (See, Abstract.)

Accordingly, based on the cited passage above, device controller 11 selects the portion of the larger geographic area, which each CRT 17 will display. Once selected, device controller 11 directs distributor 14 to provide the selected portion of the larger geographic area to a respective refresh memory 16 (16-1, 16-2, 16-3, 16-4) of each CRT 17. As recited by Nobumasa:

The video information from the memory 13 is branched with the distributor 14, the video information distributed is stored in a plurality of refresh memories 16-1 . . . 16-4, and the address of the memories is stored in the refresh memory address circuit 15. (See, Abstract.)

Hence, based on the cited passage above, distributor 14, as directed by device controller 11, stores the portion of the video information within picture memory 13 to a single refresh memory, e.g., refresh memory 16-1. In other words, refresh memories 16 each receive a respective portion of the larger geographic area to which the CRT 17 coupled to the respective refresh memory 16 is to display. Accordingly, once a device controller 11 directs distributor 14 to store a respective portion of a larger geographics area within each respective refresh memory 16, such information may be displayed by the CRT 17 coupled to the respective refresh memory 16. Accordingly, as recited by Nobumasa:

CRTs 17-1 . . . 17-4 are provided in pair with memories 16-1 . . . 16-4 to display the video information stored in each memory. Thus, arbitrary graphic areas displayed on each CRT, and the graphic area broader as a whole can be displayed with flexibility. (See, Abstract.)

Hence, the disclosure in Nobumasa is limited to a single display unit, which consists of a plurality of CRTs 17, which display an arbitrary portion of a larger geographic area, as directed by device controller 11 in combination with distributor 14 to provide the respective area, which the CRT 17 will display, to a refresh memory 16 coupled to the CRT 17 (*See, Abstract.*). However, Nobumasa is devoid of any teaching or suggestion as to whether this larger geographic area is updated due to motion or other like change to the video information received by device controller 11. Hence, Nobumasa fails to disclose how updates to the memorized video information within picture memory 13 are provided to refresh memories 16.

Furthermore, Nobumasa teaches a single display unit that consists of a plurality of CRTs 17 in common use of device controller 11. The display unit taught by Nobumasa is most likely coupled to some video or graphics controller directly and not via a shared communications channel to receive the video information that is stored within picture memory 13 by device controller 11. (*See, supra.*)

2. Overview of Dye Reference

Dye describes:

a multi-channel graphics display system wherein the graphics controller portion of the system is physically separate from that portion which determines the number of terminals to be driven, such that only a minor portion of the graphics display system circuitry need be redesigned to modify the system for any given combination of number of terminals, display resolution, or other specific system parameters. (col. 1, lines 32-40.)

As further described within Dye:

The display memory portion of graphics controller 30, illustrated further in FIG. 4, is apportioned and multiplexed in order to provide independent sets of video display information to video interface circuit 32. This apportioned and multiplexed video graphics information from controller 30 is then divided by video interface circuit 32, and the appropriate portion is sent to each of display terminals 14, 16, 18 and 20. (col. 2, lines 47-55.)

Accordingly, as illustrated with reference to FIGS. 2 and 3 of Dye, each display is coupled via a respective communications channel to video interface 32. Accordingly, display 14, display 16, display 18 and display 20 are not coupled via shared communications channel to interface 32, but instead, are directly coupled to video interface 32 via a respective, non-shared communications channel. As further described within Dye:

In operation packets of graphics commands and data are passed from the host to the graphics display system and queued in dual port RAM 38. The queue addresses are segmented such that the host applications write instructions to individuals queues, each representing a separate user display. (col. 3, lines 4-9.)

As further described by Dye:

Video RAM portion 57 of working/video ram 56 is divided into appropriate sections and mapped as shown in FIG. 4 in response to a configuration logic signal from configuration logic register 74 for a four-channel system as required for video interface 32. As shown in FIG. 4, the video display portion of the memory is mapped to provide independent video graphics information to each of the four independent displays. (col. 4, lines 6-13.)

Accordingly, based on the passages cited above, Dye teaches a multi-channel video graphics display system. However, rather than coupling the various displays (14-120) to a shared communications channel, Dye teaches a video interface 32, which is coupled between graphics controller 30 and displays 16-20, as shown in FIGS. 2 and 3 of Dye. Hence, Dye fails to disclose a shared communications channel coupled between, for example, graphics controller 30 and displays 14-20.

3. Overview of Hampel Reference

Hampel discloses an apparatus and method for concurrently refreshing first and second rows of memory cells in a dynamic random access memory (DRAM) component that includes a plurality of banks of memory cells organized in rows. (See, Abstract.) As further disclosed by Hampel, logic in the DRAM component activates the row indicated by the row register in response to an activate request and pre-charges the row in response to a pre-charge request, the row being in a bank indicated by the active request and by the pre-charge request. (See, Abstract.)

As described in the Background of Hampel, Hampel is directed to problems associated with the refresh requirements of individual storage cells in a DRAM component. As described by Hampel:

Because refresh operations consume DRAM bandwidth that could otherwise be used for data read and write transactions, it is desirable to reduce the time spent performing refresh operations. Unfortunately, core logic constraints and the limited command interface of most DRAM devices limits the extent to which refresh overhead can be reduced without sacrificing device operability. (col. 1, lines 54-60.)

Accordingly, Hampel teaches:

A method and apparatus for performing concurrent refresh and signal calibration operations in a DRAM component . . . Memory cells are refreshed within the DRAM component and a signaling circuit within the DRAM component is calibrated concurrently with refreshing the memory cells. (col. 3, lines 33-38.)

Hence, the teachings of Hampel are directed to resolving disadvantages associated with the refresh requirements of DRAM memory cells; and as a result, are not directed to, or even related to, graphics displays or intelligent display interfaces.

4. Overview of Knox Reference

Knox discloses a multi-tile video display system with distributed CRTC. As disclosed by Knox:

a plurality of monitors are implemented which incorporate their own CRTC. Rather than receiving a standard video signal, they are connected to a video controller via a high speed serial bus, over which the video controller transmits only the changes in the video image to be displayed. (col. 1, lines 51-56.)

As illustrated with reference to FIG. 8 of Knox and as described with reference to FIG. 10:

FIG. 8 shows the logical association of the serial bus's 210 branch and leaves as they would be attached in FIG. 7. A "root" is typically a controller on the bus, a "branch" is any node which is connected to more than one other node, and a "leaf" is a bottom-most node on the bus. (col. 7, lines 3-9.)

As described with reference to FIG. 10 of Knox, the various monitors shown in FIG. 8 of Knox, the various monitors (400, 420, 440, and 460) are provided with adjacent monitor detectors 426, 428, 430 and 432. As further described by Knox:

the branch monitor 400 reads its own adjacent monitor detectors to attempt to find the monitors (here the monitor 420) that has turned on its adjacent monitor detector in step 704. Therefore, the branch monitor reads to adjacent monitor detectors 406, 408, 410 and 412 and determines its transmit/receive adjacent monitor detector 410 has sensed the presence of the second monitor 420, because the transmit/receive adjacent monitor detector 426 of the monitor is transmitting, (col. 8, lines 11-19.)

Hence, to enable the multi-tile video display system as disclosed by Knox:

the system according to the invention also provides automatic detection of both view orientation and placement of multiple monitors so that they can appear as a single, large, multi-tiled monitor. (col. 6, lines 13-17.)

B. Rejection of Claims 1, 2 and 12 As Anticipated by Nobumasa

1. Errors of Law and Fact in the Rejection

Applicant respectfully asserts that the Examiner has failed to adequately set forth a *prima facie* rejection under 35 U.S.C. §102(b). "Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, *arranged as in the claim.*" *Lindemann Maschinenfabrik v. American Hoist & Derrick* ("Lindemann"), 730 F.2d 452, 1458 (Fed. Cir. 1994)(emphasis added). Additionally, each and every element of the claim must be exactly disclosed in the anticipatory reference. *Titanium Metals Corp. of American v. Banner* ("Banner Titanium"), 778 F.2d 775, 777 (Fed. Cir. 1985).

According to the Examiner, distributor 14, as taught by Nobumasa discloses a shared communications channel, as recited by the claimed subject matter. Applicant respectfully submits that the Examiner has incorrectly associated distributor 14, as taught by Nobumasa, with a

shared communications channel, as recited by the claimed subject matter. (See, ¶1 of Office Action mailed April 1, 2005.) However, as illustrated by the displayed figure in the Abstract of Nobumasa, distributor 14 functions as, for example, a multiplexor, to direct a distinct portion of the video information in picture memory 13 to each respective refresh memory 16. In other words, as illustrated in the figure in the Abstract of Nobumasa, each refresh memory 16 (16-1, . . . 16-4) is separately coupled to distributor 14.

Furthermore, as recited by Applicant's Specification:

Communications channel 24 can take various forms, such as a bus or a daisy chained cable. (See, pg. 4, lines 5-6 of Applicant's Specification.)

Consequently, Applicant respectfully submits that the Examiner has incorrectly relied on distributor 14, as taught by Nobumasa, to disclose a shared communications channel, as recited by the claimed invention. Furthermore, according to the Examiner:

Nobumasa et al. teach a method comprising identifying, by a video controller (11), a first updated portion of first video image data that has changed since a previous transmission to the first display (16-1 . . . 16-4); . . . identifying, by the video controller, a second updated portion of second video image data that it has changed since the previous transmission to a second display device (16-1 . . . 16-4). (See, pg. 3, ¶1 of Office Action mailed April 1, 2005.)

Although Nobumasa fails to disclose or provide any teachings as to how updates to the video information are handled, apparently, the Examiner finds that Nobumasa inherently discloses such features. Applicant respectfully submits that the Examiner cannot establish a *prima facie* case of anticipation unless the Examiner provides a basis in fact under technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the prior art. *Ex Parte Levy*, 17 U.S.P.Q. 2d 1461, 1464 (Bd. Pat.App. and Intr. 1990.)

The Federal Circuit Court of Appeals of In Re Rijckaert, 9, F.3d 1531 (Fed. Cir. 1993) held that

[T]he fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. (9 F.3d at 1534, 28 U.S.P.Q. 2d at 1555, 1957.)

Here, the Examiner provides no basis in fact under technical reasoning to reasonably support the determination that the directing of distributor 14 by device controller 11 to store data within refresh memories 16 inherently discloses the recited features of the claimed subject matter. Consequently, Applicant respectfully submits that the Examiner has failed to establish the inherency within the display unit, as taught by Nobumasa, of the identification by a video controller of first updated portion of video image data that has changed since the previous transmission to a first display device and identification by the video controller of a second updated portion of second

video data that has changed since a previous transmission to a second display device, as recited by the claimed subject matter.

Furthermore, the Examiner has improperly equated the distributor 14, taught by Nobumasa, to disclose the shared communications channel, as recited by the claimed subject matter. Hence, a *prima facie* case of anticipation of the claims over Nobumasa has not been established and the rejection of Claims 1, 2 and 12 is therefore erroneous.

2. Specific Limitations Not Described in the Prior Art

Independent Claim 1 recites:

identifying, by a video controller, a first updated portion of first video image data that has changed since a previous transmission to a first display device;
transmitting the first updated portion of the first video image data from the video controller to the first display device;

identifying, by the video controller, a second updated portion of second video image data that has changed since a previous transmission to a second display device; and

transmitting the second updated portion of second video image data from the video controller to the second display device,

wherein the first updated portion and the second updated portion are transmitted over a shared communication channel coupled between the video controller, the first display device and the second display device. (Emphasis added.)

3. Explanation Why Such Limitations Render the Claims Novel Over the Prior Art

Applicant claims an intelligent display interface, which limits the transmission of data over a shared communications channel to first and second display devices. The data transmitted over the shared communications channel is limited to data that has changed since the previous transmission to first and second display devices over the shared communications channel. As indicated in Applicant's Specification:

Communications channel 24 can take various forms, such as a bus or a daisy chained cable. (See, pg. 4, lines 5-6 of Applicant's Specification.)

In contrast, Nobumasa teaches a display unit, which consists of a plurality of CRTs, which are controlled by a device controller, such that each CRT displays a respective portion of a larger geographic area to enable the display unit to collectively display a larger geographic area using the plurality of CRTs. The device controller 11, as taught by Nobumasa, selects the portion of the larger geographic area, which each CRT (17-1, . . . 17-4) will display in using distributor 14. Device controller 11 directs distributor 14 to load the selected portion of the respective larger geographic area within the refresh memory (16-1, . . . 16-4) coupled to the respective CRT, which will display the selected portion of the larger geographic area. (See, Abstract.)

As indicated above, the Examiner improperly equates distributor 14, as taught by Nobumasa, with the shared communications channel, as recited in independent Claim 1. However, as clearly illustrated by the figure in the Abstract of Nobumasa, the distributor 14 functions, for example, as a multiplexor, at the direction of device controller to branch the video information contained within picture memory 13 to the respective refresh memories 16. Hence, as clearly illustrated in the figure, each refresh memory 16 is separately coupled to distributor 14 and therefore receives distinct information from distributor 14, as directed by device controller 11.

In other words, Nobumasa teaches that distributor 14 provides distinct information to each refresh memory 16 so that each respective refresh memory 16 contains a different portion of the larger geographic area, which will be displayed by display unit when the various portions of the larger geographic area are collectively displayed by CRTs 17. Hence, Applicant respectfully submits that Nobumasa fails to disclose or suggest a shared communications channel, as recited by independent Claim 1.

Furthermore, although Nobumasa fails to disclose or suggest the manner in which updates to video information within picture memory are handled, the Examiner, for example, via inherency, submits that device controller 12 identifies updated data within picture memory that is changed since a previous transmission to a refresh memory 16-1. However, as known to those skilled in the art, conventional handling of updates to image data does not limit the transmission to only the updated image data, but includes the entire portion of the image, including portions of the image, which are updated, and portions of the image, which remain the same.

Accordingly, Applicant respectfully submits that one skilled in the art, based on the disclosure in Nobumasa, would find that device controller would receive video information, which contains updates, as well as unchanged video information, and from that information, would load such information within picture memory 13 and update the entire image held within the respective refresh memories 16 to collectively display an updated image via CRTs 17. Consequently, Applicant respectfully submits that Nobumasa fails to disclose a shared communications channel, as well as the limiting of updated data, to first and second display devices, as recited by independent Claim 1.

The case law establishes that anticipation requires the presence in a single prior reference disclosure of each and every element of the claimed invention, as arranged in the claim. Lindemann. Furthermore, each and every element of the claim must be exactly disclosed in the anticipatory reference. Banner Titanium.

Here, Applicant respectfully submits that the Examiner is prohibited from relying on Nobumasa as an anticipatory reference since Nobumasa fails to disclose at least the shared communications channel, as recited by independent Claim 1, as well as the limitation of data transmitted to first and second display devices to data that has changed since the previous

transmission. Id. Accordingly, the Examiner fails to establish a *prima facie* case of anticipation of independent Claim 1 with Nobumasa as an anticipatory reference since Nobumasa does not exactly disclose each and every element of the claim. Id. Therefore, the Examiner has failed to set forth a *prima facie* rejection under 35 U.S.C. §102(b) since the Examiner fails to illustrate the presence in a single prior art reference disclosure of each and every element of the claimed invention, as arranged in the claim. Lindemann.

Consequently, a *prima facie* case of anticipation of Claims 1, 2 and 12 is not established and the rejection of Claims 1, 2 and 10 should be overturned. Id. Accordingly, Applicant respectfully requests that the §102(b) rejection of Claims 1, 2 and 12 be overturned.

C. Rejection of Claims 1 and 2 As Anticipated by Dye

1. Errors of Law and Fact in the Rejection

The Examiner has made the same errors as described previously with respect to the rejected Claims 1, 2 and 12. In addition, the Examiner fails to comply with the legal standards for establishing a *prima facie* case of anticipation, which require the presence in a single prior art reference disclosure of each and every element of the claimed invention, as arranged in the claim. Lindemann.

According to the Examiner, the shared communications channel, as recited by the claimed subject matter, is disclosed by the P2 connector and video interface module 32, as illustrated in FIG. 3 of Dye. (See, ¶1, pg. 4 of Office Action mailed April 1, 2005.) Applicant respectfully submits that the Examiner has improperly equated the video interface 32 and P2 connector, as taught by Dye, with a shared communications channel, as recited by the claimed subject matter.

As indicated above, Applicant's Specification defines a shared communications channel as follows:

Communications channel 24 can take various forms, such as a bus or a daisy chained cable. (See, pg. 4, lines 5-6 of Applicant's Specification.)

In contrast to the claimed subject matter, Dye teaches:

a multi-channel graphics display system wherein the graphics controller portion of the system is physically separate from that portion which determines the number of terminals to be driven, such that only a minor portion of the graphics display system circuitry need be redesigned to modify the system for any given combination of number of terminals, display resolution, or other specific system parameters. (col. 1, lines 32-40.) (Emphasis added.)

As further described within Dye:

The display memory portion of graphics controller 30, illustrated further in FIG. 4, is apportioned and multiplexed in order to provide independent sets of video

display information to video interface circuit 32. This apportioned and multiplexed video graphics information from controller 30 is then divided by video interface circuit 32, and the appropriate portion is sent to each of display terminals 14, 16, 18 and 20. (col. 2, lines 47-55.) (Emphasis added.)

As shown in FIGS. 2 and 3 of Dye, each display is coupled via a respective communications channel to video interface 32. Accordingly, display 14, display 16, display 18 and display 20 are not coupled via shared communications channel to interface 32, but instead, are directly coupled to video interface 32 via a respective, non-shared communications channel. Hence, a *prima facie* case of anticipation of independent Claim 1 by Dye has not been established and therefore, the rejection of the claimed subject matter is erroneous. Id.

Furthermore, Applicant respectfully submits that the Examiner cannot establish a *prima facie* case of anticipation, since the Examiner has failed to provide a basis in fact under technical reasoning to reasonably support the determination that the video controller 30, as taught by Dye, identifies a first updated portion of first video image data that is changed since the previous transmission to the first display and identifies the second updated portion of second video image data that has changed since a previous transmission to a second display. as recited by the claimed subject matter. Levy, supra.

Applicant respectfully submits that Dye is devoid of, and therefore fails to disclose or suggest how updates to video image data are handled within the system taught by Dye. Hence, the only means in which Dye could disclose the above-recited features of the claimed subject matter is via inherency.

The Federal Circuit Court of Appeals of In Re Rijckaert, 9, F.3d 1531 (Fed. Cir. 1993) held that:

[T]he fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. (9 F.3d at 1534, 28 U.S.P.Q. 2d at 1955, 1957.)

Here, as illustrated by the Background of Dye, Dye is directed to problems regarding the need of a separate graphics controller to provide graphics information to each individual display unit to provide independent video graphics information to multiple displays. (See, col. 1, lines 11-21.) Conversely, the identification of the updated first and second portions of video image data, as recited by the claimed subject matter, are provided to lower bandwidth requirements over the shared communications channel to enable multiple display devices to share the same communications channel.

Hence, Applicant respectfully submits that since the teachings and disclosure within Dye are directed to providing a single graphics controller for driving multiple displays (see, col. 2, lines 47-55), the Examiner is prohibited from establishing some technical reasoning to support the determination that Dye discloses the identification of first updated image data that has changed

since the previous transmission and second updated image data that has changed since a previous transmission to a first display device to a second display, as recited by the claimed subject matter.

Hence, a *prima facie* case of anticipation of the claims by Dye has not been established, and the rejection is therefore erroneous and should be overturned.

2. Specific Limitations Not Described in the Prior Art

Independent Claim 1 recites:

identifying, by a video controller, a first updated portion of first video image data that has changed since a previous transmission to a first display device;
transmitting the first updated portion of the first video image data from the video controller to the first display device;

identifying, by the video controller, a second updated portion of second video image data that has changed since a previous transmission to a second display device; and

transmitting the second updated portion of second video image data from the video controller to the second display device,

wherein the first updated portion and the second updated portion are transmitted over a shared communication channel coupled between the video controller, the first display device and the second display device. (Emphasis added.)

3. Explanation Why Such Limitations Render the Claims Novel Over the Prior Art

Dye is directed to overcoming problems of multiple graphics display systems, which require a separate video graphics controller for each terminal, which can be cost prohibitive. (See, col. 1, lines 11-21.) In contrast to the claimed subject matter, Dye teaches:

a multichannel video graphics display system . . . which utilizes a single graphics controller and associated graphics processor to supply independent video graphic information to a plurality of independent display terminals. (See, Abstract.) (Emphasis added.)

To provide such functionality, Dye teaches video interface 32, which is coupled between a graphics controller 30 and displays (14, 16, 18, 20) As indicated above, the Examiner equates video interface 32 and P2 connector, as shown in FIG. 3 of Dye, with the shared communications channel, as recited by the claimed subject matter. However, as indicated in Applicant's Specification:

communications channel 24 can take various forms, such as a bus or a daisy chained cable. (See, pg. 4, lines 5-6 of Applicant's Specification.)

Accordingly, Applicant respectfully submits that the video interface board 32, as taught by Dye, and P2 connector for connecting the video interface board 32 to graphics controller 30, fails to disclose a shared communications channel, as recited by the claimed subject matter.

Furthermore, Dye fails to exactly or inherently disclose the identification of the first updated portion of first video image data that is changed since the previous transmission to a first display

device and the identification of a second updated portion of video image data that is changed since a previous transmission to a second display device, as recited by the claimed subject matter.

As indicated above, these recited features of the claimed subject matter are performed to reduce bandwidth requirements of the shared communications channel coupled between the first and second display devices that are recited by Claim 1. Conversely, Dye is directed to cost issues associated with driving multiple independent displays, which conventionally require a separate graphics controller for each independent display. (See, col. 1, lines 11-24).

Hence, Dye teaches the multichannel video graphics display system, which utilizes single graphics controller and associated graphics processor to supply independent video graphic information to a plurality of independent display terminals. (See, Abstract.) Applicant respectfully submits that since Dye is devoid of any teachings or suggestions regarding limiting transmission to displays to simply the updated portion of the image data, Dye fails to either inherently or exactly disclose each of the recited features of Claim 1.

Accordingly, Applicant respectfully submits that the Examiner has failed to comply with the legal requirements for establishing a *prima facie* case of anticipation, which require the presence in a single prior art reference, disclosure of each and every element of the claimed invention, as arranged in the claim. Lindemann. Furthermore, the Examiner is prohibited from relying on Dye as an anticipatory reference, since Dye fails to disclose each and every element of the claim. Banner Titanium.

Therefore, a *prima facie* case of anticipation of Claims 1 and 2 is not established and the rejection of Claims 1 and 2 should be overturned. Consequently, Applicant respectfully requests that the §102(b) rejection of Claims 1 and 2 be overturned.

D. Rejection of Claims 3, 5 and 37-38 As Obvious over Dye in View of Hampel

1. Errors of Law and Fact in the Rejection

For the reasons provided below, the Examiner has failed to establish a *prima facie* case of obviousness in view of the references of record. The Federal Circuit Court of Appeals in In re Rijckaert, 9 F.3d 1531, 28 U.S.P.Q. 2d 1955 (Fed. Cir. 1993) held that:

In rejecting claims under 35 U.S.C. § 103, the examiner bears the initial burden of presenting a *prima facie* case of obviousness. . . . "A *prima facie* case of obviousness is established when the teaching from the prior art itself would appear to have suggested the claimed subject matter to a person of ordinary skill in the art." . . . If the examiner fails to establish a *prima facie* case, the rejection is improper and will be overturned. (Emphasis added.) 9 F.3d at 1532, 28 U.S.P.Q. 2d at 1956.

Applicant respectfully submits that the combined teachings of Dye in view of Hampel would not have suggested the claimed invention to one of ordinary skill in the art, as

required to establish a *prima facie* case of obviousness. *Id.* Hence, a *prima facie* case of obviousness has not been established and the rejection is erroneous and should be overturned.

The Examiner is correct in recognizing that Dye fails to teach updating the video memory being done in both regular and irregular intervals. As a result, the Examiner cites Hampel. According to the Examiner:

Hampel on the other hand teaches a memory controller issuing commands to perform various operations requiring different time intervals (such as tRT, TRAS), for completion. See col. 6, lines 46-67. For example, Hampel illustrates as shown in Fig. 3 timing diagram that illustrates the elapsed time required to perform sixteen refresh operations.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify a graphic processor (52) shown in Fig. 3 to incorporate Hampel's refreshing operations as demonstrated in Fig. 2 in order to manage functionalities of RDRAM devices as taught by Hampel (col. 4, lines 29-32). (See, pg. 6, ¶¶2 and 3 of Office Action mailed April 1, 2005.)

Based on the cited passage above, the Examiner indicates that the suggestion or motivation for modifying Dye in view of Hampel is based on the motivation:

to manage functionalities RDRAM devices as taught by Hampel. (col. 4, lines 29-32.) (See, *supra*.)

It is well established that obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention absent the teaching or suggestion supporting such combination. ACS Hospital Sys., Inc. v. Montefiore Hospital, 732 F.2d. 1572, 1577, 221 U.S.P.Q. 929, 933 (Fed. Cir. 1984). Hence, Applicant respectfully submits that the Examiner's indicated motivation of managing functionalities of RDRAM devices, as taught by Hampel (col. 4, lines 29-32), fails to provide a teaching or suggestion to support the Examiner's proposed modification of Dye in view of Hampel. To wit, as indicated above, Dye is directed to cost issues associated with driving multiple independent displays, which conventionally require a separate video graphics controller for each independent display. (See, col. 1, lines 11-21.)

Conversely, Hampel is directed to problems associated with refresh requirements of individual storage cells in a DRAM component. (See, col. 1, lines 54-60.) Hence, the teachings of Hampel are directed to resolving disadvantages associated with refresh requirements of DRAM memory cells; and as a result, are not directed to or even related to graphics displays or graphics controllers for driving multiple, independent displays.

Therefore, Applicant respectfully submits that the Examiner is prohibited from modifying Dye in view of Hampel to render the pending claims obvious, since the Examiner fails to illustrate a teaching or suggestion to support such combination. *Id.*

Accordingly, Applicant respectfully submits that the combined teachings of Dye in view of Hampel would not have suggested the claimed invention to one of ordinary skill in the art, as required to establish a *prima facie* case of obviousness. Rijckaert, *supra*. Hence, a *prima facie*

case of obviousness has not been established and the rejection is erroneous and should be overturned. Id.

2. Specific Limitations Not Described in the Prior Art

Claims 3, 5 and 37-38 recite analogous claim features. Claim 5 is representative.

Claim 5 recites:

wherein updating the first video memory is repeated at irregular intervals;
and
wherein said irregular intervals are based on detecting a change in the first video image data since the previous transmission to the first display device.
(Emphasis added.)

3. Explanation Why Such Limitations Render the Claims Non-Obvious Over the Prior Art

The Examiner fails to illustrate that the combination or modification of Dye in view of Hampel teaches or suggests each of the recited features of the claimed invention. However, the case law requires that “to establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art.” In re Royka, 490 F.2d 981, 180 U.S.P.Q. 580 (CCPA 1974).

Here, the claimed invention recites:

wherein updating the first video memory is repeated at irregular intervals;
and
wherein said irregular intervals are based on detecting a change in the first video image data since the previous transmission to the first display device.
(Emphasis added.)

Applicant respectfully submits that even assuming, arguendo, that the combination of Dye in view of Hampel taught updating the first video memory is repeated at irregular intervals, the failure of Dye to teach detecting a change in the first video image data since the previous transmission to the first display device prohibits the combination of Dye in view of Hampel from teaching or suggesting each of the above-recited features of the claimed subject matter.

As indicated above, since the teachings in Dye are directed to providing a single graphics controller for driving multiple displays (*see*, col. 2, lines 47-55), the Examiner is prohibited from establishing some technical reasoning to support the determination that Dye discloses identification of first updated image data that has changed since the previous transmission to a first display device. Consequently, Applicant respectfully submits that the Examiner cannot establish a *prima facie* case of obviousness, since the Examiner fails to provide a base in fact under legal reasoning to reasonably support the determination that Dye performs a detection of updated image

data since a previous transmission to a first display device, as recited by the claimed subject matter. In re Levy, supra.

Therefore, Applicant respectfully submits that the Examiner fails to establish a *prima facie* case of obviousness, since neither the combination or modification of Dye in view of Hampel teaches each of the recited features of Claims 3, 5 and 37-38. In re Royka, supra. Furthermore, Applicant respectfully submits that the suggestion or motivation provided by the Examiner to modify Dye in view of Hampel is insufficient to make such modification or combination. ASC Hospital Systems, supra.

Accordingly, Applicant respectfully submits that the combined teachings of Dye in view of Hampel would not have suggested the claimed invention to one of ordinary skill in the art, as required to establish a *prima facie* case of obviousness. Rijckaert, supra. Therefore, a *prima facie* case of obviousness of the claims is not established and the rejection of Claims 3, 5 and 37-38 should be overturned. Id.

E. Rejection of Claims 10 and 11 As Obvious over Dye in View of Hampel

1. Errors of Law and Fact in the Rejection

The Examiner has made the same errors as described previously with respect to the rejected Claims 3, 5, 37 and 38. For the reasons provided below, the Examiner has failed to establish a *prima facie* case of obviousness in view of the references of record.

Applicant respectfully submits that the combined teachings of Dye in view of Hampel would not have suggested the claimed invention to one of ordinary skill in the art, as required to establish a *prima facie* case of obviousness. Id. Hence, a *prima facie* case of obviousness has not been established and the rejection is erroneous and should be overturned.

As indicated above, the Examiner has indicated the suggestion or motivation for modifying Dye in view of Hampel is based on the motivation:

to manage functionalities of RDRAM devices as taught by Hampel. (col. 4, lines 29-32.) (See, supra.)

It is well established that obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention absent the teaching or suggestion supporting such combination. ACS Hospital Sys., Inc. v. Montefiore Hospital, 732 F.2d. 1572, 1577, 221 U.S.P.Q. 929, 933 (Fed. Cir. 1984). Here, Applicant respectfully submits that the Examiner's indicated motivation of managing functionalities of RDRAM devices, as taught by Hampel (col. 4, lines 29-32), fails to provide a teaching or suggestion to support the Examiner's proposed modification of Dye in view of Hampel. To wit, as indicated above, Dye is directed to cost issues associated with driving multiple independent displays, which conventionally require a separate video graphics controller for each independent display. (See, col. 1, lines 11-21.)

Conversely, Hampel is directed to problems associated with refresh requirements of individual storage cells in a DRAM component. (See, col. 1, lines 54-60.) Hence, the teachings of Hampel are directed to resolving disadvantages associated with refresh requirements of DRAM memory cells; and as a result, are not directed to or even related to graphics displays or graphics controllers for driving multiple, independent displays.

Therefore, Applicant respectfully submits that the Examiner is prohibited from modifying Dye in view of Hampel to render the pending claims obvious, since the Examiner fails to illustrate a teaching or suggestion to support such combination. Id.

Accordingly, Applicant respectfully submits that the combined teachings of Dye in view of Hampel would not have suggested the claimed invention to one of ordinary skill in the art, as required to establish a *prima facie* case of obviousness. Rijckaert, supra. Hence, a *prima facie* case of obviousness has not been established and the rejection is erroneous and should be overturned. Id.

2. Specific Limitations Not Described in the Prior Art

Claims 10 and 11 recite analogous claim features. Claim 10 is representative. Claim 10 recites:

wherein the first portion and the second portion are formatted differently.
(Emphasis added.)

3. Explanation Why Such Limitations Render the Claims Non-Obvious Over the Prior Art

The Examiner fails to illustrate that the combination or modification of Dye in view of Hampel teaches or suggests each of the recited features of the claimed invention. However, the case law requires that “to establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art.” In re Royka, 490 F.2d 981, 180 U.S.P.Q. 580 (CCPA 1974).

Here, the claimed invention recites:

wherein the first portion and a second portion are formatted different.
(Emphasis added.)

As correctly pointed out by the Examiner, Dye does not teach the above-recited feature of the claimed subject matter. As a result, the Examiner cites Hampel. According to the Examiner:

Hampel teaches the first portion and a second portion are formatted different (See, col. 7, lines 4-37, Hampel discloses RDRAM command interface such that various refresh operations may be commanded through formatting). (See, pg. 6, ¶4 of Office Action mailed April 1, 2005.)

As indicated in the passage of Hampel cited by the Examiner:

By formatting the second PRER command 47 to address a different bank than the bank addressed in the three primitive commands that constitute the first refresh command sequence (i.e., commands 41, 43, 45), a new refresh command sequence is begun. (col. 7, lines 13-17.) (Emphasis Added.)

Applicant respectfully submits that the above-recited passage of Hampel merely describes modification of a command to address a different bank than a previously addressed bank. Applicant respectfully submits that the formatting of such a command to address a different address bank and initiate a new refresh command neither discloses nor suggests the first updated portion of a first video image data that has changed since the previous transmission to a first display device and the second updated portion of second video image data that has changed since a previous transmission to a second display device, which are formatted differently.

Hence, both Dye and Hampel fail to provide any teachings or suggestions regarding first and second updated portions of first and second video image data that are formatted differently, as recited by the claimed subject matter. Consequently, Applicant respectfully submits that the Examiner fails to establish a *prima facie* case of obviousness, since neither the combination nor modification of Dye in view of Hampel teaches each of the recited features of Claim 11. *Id.*

Furthermore, Applicant respectfully submits that the Examiner fails to establish a suggestion or motivation to modify Dye in view of Hampel. Applicant respectfully submits that Hampel and Dye are, in essence, non-analogous art. To wit, Dye is directed to providing a single graphics controller for driving multiple displays (*see*, col. 2, lines 47-55), while Hampel is directed to refresh requirements associated with DRAM memory, which Applicant respectfully submits is entirely distinct from refreshing a display from a memory, as involved in multiple graphics display systems, as taught by Dye. (*See*, Col. 1, lines 47-55.)

Furthermore, the Examiner's indicated motivation of managing functionalities of DRAM devices, as taught by Hampel (col. 4, lines 29-32), fails to provide a sufficient teaching or suggestion to support the Examiner's proposed modification of Dye in view of Hampel. Therefore, Applicant respectfully submits that the Examiner is prohibited from modifying Dye in view of Hampel to render the pending claims obvious, since the Examiner fails to illustrate a teaching or suggestion to support such determination. ACS Hospital Systems, supra.

Consequently, Applicant respectfully submits that the combined teachings of Dye in view of Hampel would not have suggested the claimed subject matter to one of ordinary skill in the art, as required to establish a *prima facie* case of obviousness. Rijckaert, supra. Hence, a *prima facie* case of obviousness of Claims 10 and 11 has not been established and the rejection of Claims 10 and 11 is erroneous and should be overturned. *Id.*

F. Rejection of Claim 12 As Obvious Over Dye in View of Hampel

1. Errors of Law and Fact in the Rejection

The Examiner has made the same errors as described previously with respect to the rejected Claims 3, 5, 10, 11, 37 and 38. For the reasons provided below, the Examiner has failed to establish a *prima facie* case of obviousness in view of the references of record.

Applicant respectfully submits that the combined teachings of Dye in view of Hampel would not have suggested the claimed invention to one of ordinary skill in the art, as required to establish a *prima facie* case of obviousness. Id. Hence, a *prima facie* case of obviousness has not been established and the rejection is erroneous and should be overturned.

As indicated above, the Examiner provides the following statement as the suggestion or motivation for modifying Dye in view of Hampel:

To manage functionalities of space RDRAM devices as taught by Hampel.
(col. 4, lines 29-32.) (See, pg. 6, ¶3 of Office Action mailed April 1, 2005.)

Applicant respectfully submits that the Examiner's indicated motivation of managing functionalities of RDRAM devices, as taught by Hampel (col. 4, lines 29-32), fails to provide a suggestion or motivation to support the Examiner's proposed modification of Dye in view of Hampel to render the claimed subject matter obvious. Therefore, the Examiner fails to establish a sufficient teaching or suggestion for supporting the combination of Dye in view of Hampel to render the claimed subject matter obvious. ASC Hospital Systems, supra.

Consequently, Applicant respectfully submits that the Examiner is prohibited from modifying Dye in view of Hampel in order to render the pending claims obvious, since the Examiner fails to illustrate a teaching or suggestion to support such combination. Id.

Accordingly, Applicant respectfully submits that the combined teachings of Dye in view of Hampel would not have suggested the claimed subject matter to one of ordinary skill in the art, as required to establish a *prima facie* case of obviousness. Rijckaert, supra. Hence, a *prima facie* case of obviousness has not been established and the rejection is therefore erroneous and should be overturned. Id.

2. Specific Limitations Not Described in the Prior Art

Claim 12 recites:

wherein the first portion includes an address to identify the first video device and the second portion includes an address to identify the second video device.
(Emphasis Added.)

3. Explanation Why Such Limitations Render the Claims Non-Obvious Over the Prior Art

The Examiner fails to illustrate that the combination or modification of Dye in view of Hampel teaches or suggests each of the recited features of the claimed invention. However, the case law requires that “to establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art.” In re Royka, 490 F.2d 981, 180 U.S.P.Q. 580 (CCPA 1974).

Here, the claimed invention recites:

wherein the first portion includes an address to identify the first video device and the second portion includes an address to identify the second video device. (Emphasis Added.)

As indicated, the first updated portion and second updated portion of first and second video image data are transmitted from the video controller to the second display device. Hence, Applicant respectfully submits that the recited features of Claim 12 require that the first and second updated portions received by the first and second display devices include an address to identify either the first or second display device, such that the correct device may update its, for example, video memory, with the received updated portion.

In contrast to the above-recited features of Claim 12, according to the Examiner:

Dye teaches the first portion includes an address to identify the first video device and the second portion includes an address to identify the second video device. (col. 3, lines 4-9.) (See, pg. 7, ¶1 of Office Action mailed April 1, 2005.)

As indicated by the passage cited by the Examiner:

In operation packets of graphics commands and data are passed from the host to the graphics display system and queued in dual port RAM 38. The queue addresses are segmented such that the host applications write instructions to individual queues, each representing a separate user display. (See, col. 3, lines 4-9.) (Emphasis Added.)

Although the cited passage indicates that the host applications direct their graphics commands and data to a respective queue of dual RAM 58, Applicant respectfully submits that the data eventually received by displays 14, 16, 18 and 20 does not include an address to identify either the first video device or the second video device.

As illustrated in FIG. 3 of Dye, the link between displays 14-20 and video interface card 32 is a point-to-point link. Accordingly, once digital video from the display RAM portion of working/video RAM 56 is multiplexed and sent out to the P2 connector to video interface module 32, video interface board 32 determines the display to which the received multiplexed digital video signal is directed. Hence, Applicant respectfully submits that data received from video connector board 32 by display, such as display 14, does not include an address which identifies display 14,

since the video connector board 32 may simply select display 14 via the point-to-point link coupling display 14 to video connector board 32 and send data directly to display 14.

Consequently, Applicant respectfully submits that the Examiner fails to establish a *prima facie* case of obviousness, since neither the combination nor modification of Dye in view of Hampel teaches each of the recited features of Claim 12. Id.

Therefore, Applicant respectfully submits that the combined teachings of Dye in view of Hampel would not have suggested the claimed subject matter to one of ordinary skill in the art, as required to establish a *prima facie* case of obviousness. Rijckaert, supra. Hence, a *prima facie* case of obviousness of Claim 12 has not been established and the rejection of Claim 12 is therefore erroneous and should be overturned. Id.

G. Rejection of Claim 13 As Obvious Over Dye in View of Hampel

1. Errors of Law and Fact in the Rejection

The Examiner has made the same errors as described previously with respect to the rejected Claims 3, 5, 10, 11, 37 and 38. For the reasons provided below, the Examiner has failed to establish a *prima facie* case of obviousness in view of the references of record.

Applicant respectfully submits that the combined teachings of Dye in view of Hampel would not have suggested the claimed invention to one of ordinary skill in the art, as required to establish a *prima facie* case of obviousness. Id. Hence, a *prima facie* case of obviousness has not been established and the rejection is erroneous and should be overturned.

As previously described, the Examiner has provided the following statement as the suggestion or motivation for modifying Dye in view of Hampel to render Claim 13 obvious:

to manage functionalities of RDRAM devices as taught by Hampel. (col. 4, lines 29-32.) (*See*, pg. 6, ¶3 of Office Action mailed April 1, 2005.)

Applicant respectfully submits that the Examiner's indicated motivation of managing functionalities of RDRAM devices, as taught by Hampel (col. 4, lines 29-32), fails to provide a sufficient teaching or suggestion to support the Examiner's proposed modification of Dye in view of Hampel to render the claimed subject matter obvious. ASC Hospital Systems, supra

In other words, Applicant respectfully submits that resolving the disadvantages associated with refresh requirements of DRAM memory cells, as indicated in Hampel (*see*, col. 1, lines 54-60), is not directed to or even related to graphics displays or graphics controllers for driving multiple independent displays (*see*, Dye, col. 1, lines 11-22). Therefore, Applicant respectfully submits that the Examiner is prohibited from modifying Dye in view of Hampel to render the claimed subject matter obvious, since the Examiner fails to illustrate a teaching or suggestion to support such combination. Id.

Accordingly, Applicant respectfully submits that the combined teachings of Dye in view of Hampel would not have suggested the claimed subject matter to one of ordinary skill in the art, as required to establish a *prima facie* case of obviousness. Rijckaert, supra. Hence, a *prima facie* case of obviousness has not been established and the rejection is therefore erroneous and should be overturned. Id.

2. Specific Limitations Not Described in the Prior Art

Claim 13 recites:

transmitting a third portion of the first video image data to the first display device;
time-stamping the first and third portions before transmission; and
synchronizing a presentation of the first and third portions based on the time-stamping. (Emphasis Added.)

3. Explanation Why Such Limitations Render the Claims Non-Obvious Over the Prior Art

The Examiner fails to illustrate that the combination or modification of Dye in view of Hampel teaches or suggests each of the recited features of the claimed invention. However, the case law requires that “to establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art.” In re Royka, 490 F.2d 981, 180 U.S.P.Q. 580 (CCPA 1974).

Here, the claimed invention recites:

synchronizing a presentation of the first and third portions based on the time stamping. (Emphasis Added.)

According to the Examiner, the above-recited feature of Claim 13 is disclosed by Hampel at col. 9, lines 31-37. (See, pg. 7, ¶2 of Office Action mailed April 1, 2005.) As indicated by the passage cited by the Examiner:

A significant advantage of using multiple primitive commands to effectuate a refresh operation in a DRAM is that control logic within the RDRAM device can be simplified. One reason for this is that the timing of the constituent pre-charge, activate and pre-charge post-refresh operations can be enforced by the memory controller instead of logic within the RDRAM device. (col. 9, lines 31-37.) (Emphasis Added.)

Applicant respectfully submits that the enforcement of pre-charge activate and pre-charge post-refresh operations provides no teachings or suggestions with regards to time stamping first and third portions before transmission and synchronizing a presentation of the first and third portions based on the time stamping, as recited by Claim 13. As previously indicated, the first and third portions referred by Claim 13 refer to updated portions of first video image data. Conversely,

the portion of Hampel cited by the Examiner is directed to operations for refreshing memory cells, as required by DRAM devices. (See, col. 1, lines 20-25.)

Applicant respectfully submits that refresh operations associated with DRAM memory cells, as involved in Hampel, although containing the same term refresh, do not refer to or suggest or even relate to refresh operations of refreshing a display according to data contained within a video memory. Hence, Hampel fails to teach or suggest each of the recited features of Claim 13.

Therefore, Applicant respectfully submits that the Examiner fails to establish a *prima facie* case of obviousness, since neither the combination nor modification of Dye in view of Hampel teaches each of the recited features of Claim 13. Royka, supra. Furthermore, Applicant respectfully submits that the suggestion or motivation provided by the Examiner to modify Dye in view of Hampel is insufficient to make such modification or combination. ACS Hospital Systems, supra.

Accordingly, Applicant respectfully submits that the combined teachings of Dye in view of Hampel would not have suggested the claimed subject matter to one of ordinary skill in the art, as required to establish a *prima facie* case of obviousness. Rijckaert, supra. Therefore, a *prima facie* case of obviousness of the claims is not established and the rejection of Claim 13 is therefore erroneous and should be overturned.

H. Rejection of Claims 15-22, 24 and 26-33 As Obvious over Dye in View of Knox

1. Errors of Law and Fact in the Rejection

The Examiner has made the same errors as described previously with respect to the rejected Claims 1, 2 and 12. For the reasons provided below, the Examiner has failed to establish a *prima facie* case of obviousness in view of the references of record. Applicant respectfully submits that the combined teachings of Dye in view of Knox would not have suggested the claimed invention to one of ordinary skill in the art, as required to establish a *prima facie* case of obviousness. Rijckaert, supra. Hence, a *prima facie* case of obviousness has not been established and the rejection is erroneous and should be overturned. Id.

Although the Examiner correctly recognizes that Dye does not teach a first video memory contained within the first display device and a second video memory contained within the second display device (see, pg. 8, ¶1 of Office Action mailed April 1, 2005), as previously indicated, Dye is devoid of, and therefore fails to teach or suggest how updates to video image data are handled within the system taught by Dye. As a result, the only means in which Dye could teach or suggest the recited features of the claimed subject matter is via inherency.

However, as indicated above, the Examiner has failed to provide a basis in fact under technical reasoning to reasonably support the determination that the video controller 30, as taught

by Dye, identifies a first updated portion of video image data that has changed since a previous transmission to the first display device and identifies a second updated portion of second video image data has changed since a previous transmission to a second display device, as recited by the claimed subject matter. Levy, supra.

To teach the inclusion of a first video memory within a first display device and a second video memory within a second display device, as recited by the claimed subject matter, the Examiner cites Knox. According to the Examiner:

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Dye's displays (14, 16, 18, 20) shown in FIG. 2 to include Knox's incorporation of memories within monitors as illustrated in FIG. 2 because, incorporation of memories helps avoid constant refreshing of the displays, and instead refreshing is handled internally within monitors as taught by Knox. (col. 3, lines 58-65.) (See, pp. 8-9, ¶2 of Office Action mailed April 1, 2005.)

Applicant respectfully submits that the modification of Dye in view of Knox, as proposed by the Examiner, would required Dye alteration of the principle of operation of Dye. As indicated by the Federal Court:

If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. In re Ratti, 270 F.2d 810, 123, U.S.P.Q. 349 (C.C.P.A. 1959).

Here, Dye teaches:

a multichannel graphics display system, wherein the graphics controller portion of the system is physically separate from that portion which determines the number of terminals to be driven, such that only a minor portion of the graphics display system circuitry need be redesigned to modify the system for any given combination of number of terminals, display resolution or other specific system parameters. (col. 1, lines 33-40.) (Emphasis added.)

As further described by Dye:

As can be seen, the only physical changes necessary involve video interface board 32, while the VME interface, local controller and graphics controller sections remain virtually identical. This allows a given system to be custom tailored to a customer's specific requirements for a particular number of terminals and required resolution utilizing only a specifically designed video interface card 32, thereby greatly reducing the initial costs for a custom tailored system. In addition, there is now required only a single graphics controller in order to drive multiple independent displays which each previously required a separate independent graphics controller. (col. 4, lines 31-45.) (Emphasis added.)

Accordingly, based on the cited passages above, Applicant respectfully submits that the teachings in Dye are directed to lowering the costs associated with modification or implementation of multichannel graphics controllers with only a minor redesign or modification to the graphics display system circuitry. As further described by Dye:

The [graphics system processor (GSP)] controls both video and display DRAM refresh cycles, as well as all display function. Working/video RAM 56 comprises a video RAM portion 57 and a display RAM portion 59. Video RAM portion 57 of the working/video RAM 56 contains data actually displayed on the screens whereas display RAM portion 59 of working video RAM 56 contains graphics processor application code, functions, and font libraries, as well as undisplayed window and/or screen information. (col. 3, lines 49-59.) (Emphasis added.)

As further described by Dye:

Video RAM portion 57 of working/video RAM 56 is divided into appropriate sections and mapped as shown in FIG. 4 in response to a configuration logic signal from configuration logic registers 74 for a four channel system as required for video interface board 32. As shown in FIG. 4, the video display portion of the memory is mapped to provide independent video graphics information to each of the four independent displays. Shift register output (digital video) from the display RAM portion of working/video RAM 56 is multiplexed and sent out the P2 connectors to video interface module 32. (col. 4, lines 6-17.) (Emphasis added.)

Based on the cited passages above, Applicant respectfully submits that Dye describes a complicated process, which utilizes graphics system processor or GSP to control video and display DRAM refresh cycles, as well as all display functions. As shown in FIG. 4, video RAM portion 57 is mapped to provide independent video graphics information to each of the four independent displays. As indicated, this is performed according to the channel configuration for video interface board 32. (*See, supra.*)

Applicant respectfully submits that the functionality taught within Dye to implement the multichannel graphics controller system, which utilizes a single graphics controller to drive multiple displays, requires the inclusion of working/video RAM 56 within graphics controller 30. Dye teaches that working/video RAM 56 comprises a video RAM portion 57 for containing the data actually displayed on the screens by mapping this memory to provide compliance with the channel configuration of video interface module 32.

Hence, Applicant respectfully submits that the inclusion of video RAM portion 57 within displays 14, 16, 18, 20, as taught by Dye, would drastically alter the principle of operation of Dye. In fact, Applicant respectfully submits that inclusion of video RAM portion 57 within each of the displays would require a complete redesign of the multichannel graphics controller, as taught by Dye, thereby changing the principle of operation of Dye. Therefore, for at least the reasons described above, Applicant respectfully submits that the teachings of Dye in view of Knox are insufficient to render the claims *prima facie* obvious. *Id.*

In fact, Applicant respectfully submits that the Examiner is prohibited from modification of Dye in view of Knox, since such modification would render Dye unsatisfactory for its intended purpose. As indicated by the Federal Circuit:

If the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. In re Gordon, 733 F.2d 900, 221 U.S.P.Q. 1125 (Fed.Cir. 1984.)

Here, the stated object of Dye is providing a multichannel graphics control system with minimal modification to the graphics display system circuitry. (See, col. 1, lines 32-42). Hence, Applicant respectfully submits that the Examiner's proposed modification of Dye's multichannel graphics controller to adapt Knox's use of a memory within the display, as taught by Dye, would render the multi-general graphics controller system, as taught by Dye, unsatisfactory for its intended purpose by requiring substantial, rather than minimal modification to graphics system circuitry. (See, col. 4, lines 31-45.) Accordingly, Applicant respectfully submits that the Examiner is prohibited from modifying Dye in view of Knox, since such modification would render Dye unsatisfactory for its intended purpose. Id.

Furthermore, Applicant respectfully submits that Dye teaches away from the modification of the display taught by Dye to include a memory, as taught by Knox, as suggested by the Examiner. As indicated by the Federal Circuit:

It is improper to combine references where the references teach away from their combination. In re Grasselli, 713 F.2d 731, 743, 218 U.S.P.Q. 769, 779 (Fed. Cir. 1983).

Here, Applicant respectfully submits that the disclosure in Dye would teach away from moving the video RAM portion into the displays according to Knox and as suggested by the Examiner, since such inclusion is provided to enable the single graphics controller for driving multiple independent displays, as taught by Dye. (See, col. 4, lines 31-45.) Furthermore, such modification is prohibited by Dye since Dye teaches that "only physical changes necessary involve video interface board 32, while . . . the graphics controller remains virtually identical." Hence, Applicant submits that the Examiner may not properly combine Dye in view of Knox since Dye teaches away from the combination, by limiting necessary physical changes to video interface card. (See, Supra.) Id.

Accordingly, Applicant respectfully submits that the claimed invention could only be arrived at through inappropriate hindsight. Therefore, Applicant respectfully submits that the Examiner fails to establish a *prima facie* case of obviousness to combine the missing elements provided by Knox with the teachings of Dye to establish a *prima facie* case of obviousness. Id.

Therefore, Applicant respectfully submits that the combined teachings of Dye in view of Knox would not have suggested the claimed invention to one of ordinary skill in the art, as required to establish a *prima facie* case of obviousness. Rijckaert, supra. Hence, a *prima facie* case of obviousness has not been established and the objection is erroneous and should be overturned. Id.

2. Specific Limitations Not Described in the Prior Art

Independent Claim 22 recites a system comprising:

a shared communication channel;
a first display device coupled to the shared communication channel and having a first video memory contained within the first display device;
a second display device coupled to the shared communication channel and having a second video memory contained within the second display device; and
a video controller coupled to the shared communication channel to transmit an identified, first updated portion of first video image data that has changed since a previous transmission to the first display device over the shared communication channel to the first display device, and to transmit an identified, second updated portion of second video image data that has changed since a previous transmission to the second display device over the shared communication channel to the second display device. (Emphasis added.)

3. Explanation Why Such Limitations Render the Claims Non-Obvious Over the Prior Art

Applicant respectfully submits that the Examiner is prohibited from combining or modifying Dye in view of Knox for at least the following reasons.

As described by Dye, in a system implemented according to the teachings of Dye:

the only physical changes necessary involve video interface board 32, while the VME interface, local controller and graphics controller sections remain virtually identical. This allows the given system to be custom tailored to a customer's specific requirements for a particular number of terminals and required resolutions utilizing only a specifically designed video interface card 32, thereby greatly reducing the initial costs for a custom tailored system. (col. 4, lines 31-40.) (Emphasis added.)

Applicant respectfully submits that the principle of operation within Dye requires the inclusion of working/video RAM memory 56, which includes video portion 57 and display portion 59 within the graphics controller 30, as taught by Dye. Alteration of the working video RAM memory 56 is taught by Dye to place video RAM portion 57 within each display (14, 16, 18, 20), as taught by Dye, would require a complete redesign of the graphics controller, as taught by Dye.

Applicant respectfully submits that this redesign would clearly alter the principle of alteration within Dye, which is directed to providing a single graphics controller for driving multiple independent displays, which is separate from a video interface 32 designed to determine the number of terminals to be driven. Accordingly, since the modification proposed by the Examiner would alter the principle of operation of Dye, the teachings of Dye in view of Knox are insufficient to render the claims *prima facie* obvious. In re Ratti, supra.

Furthermore, Applicant respectfully submits that the inclusion of video RAM portion 57 within displays 14, 16, 18 and 20, as taught by Dye would violate the stated objective within Dye of limiting necessary changes to video interface port 32, while the VME interface, local

controller and graphics controller sections remain virtually identical. (See, col. 4, lines 31-34.)

Hence, Applicant respectfully submits that inclusion of video RAM display portion 57 within displays 14, 16, 18 and 20 would render Dye unsatisfactory for its intended purpose of providing a multichannel video graphics display system:

such that only a minor portion of the graphics display system circuitry need be redesigned to modify the system for any given combination of number of terminals, display resolution or other specific system parameters. (col. 1, lines 36-40.) (Emphasis added.)

Consequently, Applicant respectfully submits that there is no suggestion or motivation to make the modification proposed by the Examiner. In re Gordon, supra.

Furthermore, Applicant respectfully submits that the disclosure within Knox teaches away from the Examiner's proposed modification of the display taught by Dye to include a memory, as taught by Knox. To wit, such a modification would not only require alteration of the principle of operation within Dye, but also would drastically increase the cost of Dye by requiring a complete redesign of the multichannel graphics channel, as taught by Dye, to include the video RAM portion 57 within each display 16-20.

Accordingly, Applicant respectfully submits that one skilled in the art would not be motivated to modify Dye in a manner specifically contrary to Dye's own teachings. Consequently, it is improper for the Examiner to combine Dye in view of Knox since Dye teaches away from their combination. In re Grasselli, supra.

Therefore, Applicant respectfully submits that the Examiner has engaged in a prohibitive hindsight-based analysis in order to arrive at the claimed subject matter. Hence, Applicant respectfully submits that the Examiner fails to establish that it would be obvious to combine the missing elements provided by Knox with the teachings of Dye. Id.

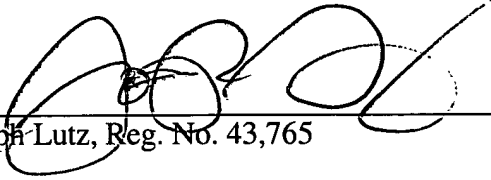
Accordingly, Applicant respectfully submits that the combined teachings of Dye in view of Knox would not have suggested the claimed invention to one of ordinary skill in the art, as required to establish a *prima facie* case of obviousness. Rijckaert, supra. Therefore, a *prima facie* case of obviousness of the claims is not established and the rejection of Claims 15-22, 24 and 26-33 is erroneous and should be overturned. Id.

Based on the foregoing, Applicant requests that the Board overturn the rejection of all pending claims and hold that all of the claims of the present application are allowable.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN

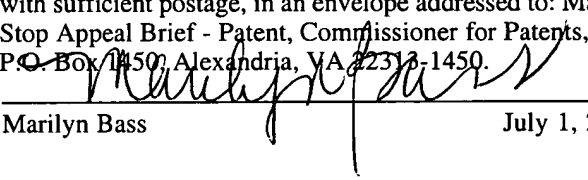
Dated: July 1, 2005

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Marilyn Bass

July 1, 2005

VIII. CLAIMS APPENDIX

The claims involved in this Appeal are as follows:

1. (Previously Presented) A method, comprising:
identifying, by a video controller, a first updated portion of first video image data that has changed since a previous transmission to a first display device;
transmitting the first updated portion of the first video image data from the video controller to the first display device;
identifying, by the video controller, a second updated portion of second video image data that has changed since a previous transmission to a second display device; and
transmitting the second updated portion of second video image data from the video controller to the second display device,
wherein the first updated portion and the second updated portion are transmitted over a shared communication channel coupled between the video controller, the first display device and the second display device.
2. (Previously Presented) The method of claim 1, further comprising refreshing a first displayed image in the first display device from a first video memory of the first display device.
3. (Previously Presented) The method of claim 1, wherein transmitting the first updated portion is repeated at regular intervals.
4. (Cancelled)
5. (Previously Presented) The method of claim 2,
wherein updating the first video memory is repeated at irregular intervals; and
wherein said irregular intervals are based on detecting a change in the first video image data since the previous transmission to the first display device.
- 6-9. (Cancelled)
10. (Previously Presented) The method of claim 1, wherein the first portion and the second portion are formatted differently.
11. (Previously Presented) The method of claim 1, wherein the first portion and the second portion are formatted alike.

12. (Previously Presented) The method of claim 1, wherein the first portion includes an address to identify the first video device and the second portion includes an address to identify the second video device.

13. (Previously Presented) The method of claim 1, further comprising:
transmitting a third portion of the first video image data to the first display device;
time-stamping the first and third portions before transmission; and
synchronizing a presentation of the first and third portions based on the time-stamping.

14. (Cancelled)

15. (Previously Presented) The system of claim 22, wherein the first display device includes a protocol handler to interpret the first video data.

16. (Previously Presented) The system of claim 22, wherein the first display device includes a timing generator to generate timing signals for a display.

17. (Previously Presented) The system of claim 16, wherein the first display device includes a control circuit to configure the timing generator.

18. (Previously Presented) The system of claim 22, wherein the first display device includes a scalar circuit to change a granularity of video image.

19. (Previously Presented) The system of claim 18, wherein the first display device includes a control circuit to configure the scalar circuit.

20. (Previously Presented) The system of claim 22, wherein the first display device includes a display interface to at least one of a CRT and a flat panel.

21. (Previously Presented) The system of claim 22, wherein the first display device includes at least one of a CRT and a flat panel.

22. (Previously Presented) A system, comprising:
a shared communication channel;
a first display device coupled to the shared communication channel and having a first video memory contained within the first display device;
a second display device coupled to the shared communication channel and having a second video memory contained within the second display device; and

a video controller coupled to the shared communication channel to transmit an identified, first updated portion of first video image data that has changed since a previous transmission to the first display device over the shared communication channel to the first display device, and to transmit an identified, second updated portion of second video image data that has changed since a previous transmission to the second display device over the shared communication channel to the second display device.

23. (Cancelled)

24. (Previously Presented) The system of claim 22, wherein:
the first display device includes a first address decoder to decode a first device address associated with the first updated portion of first video image data received over the shared communication channel; and

the second display device includes a second address decoder to decode a second device address associated with the second updated portion of second image video data received over the shared communication channel.

25. (Cancelled)

26. (Previously Presented) The system of claim 24, further comprising a non-display device coupled to the shared communication channel to receive non-video data.

27. (Original) The system of claim 24, wherein the first and second address decoders each decode a broadcast address in a broadcast message to be processed by the first and second display devices.

28. (Previously Presented) The system of claim 22, wherein the shared communication channel comprises a bus.

29. (Previously Presented) The system of claim 22, wherein the shared communication channel comprises a daisy chain.

30. (Previously Presented) The system of claim 22, wherein the first display device comprises:

an interface coupled to the shared communication channel;

a video memory coupled to the interface, the interface to update the video memory if an address associated with an updated portion of video image data over the shared communication channel matches an address of the first display device; and

a control circuit to refresh a displayed image in the first display from the first video memory.

31. (Previously Presented) The system of claim 22, wherein the second display device comprises:

- an interface coupled to the shared communication channel;
- a video memory coupled to the interface, the interface to update the video memory of the second display device if an address associated with an updated portion of video image data over the shared communication channel matches a display device address; and,
- a control circuit to refresh a displayed image in the second display device from the video memory.

32. (Previously Presented) The method of claim 1, further comprising:
updating a video memory of the first display device if an address associated with an updated portion of video image data received over the shared communication channel matches a first display device address.

33. (Previously Presented) The method of claim 1, further comprising:
updating a video memory of the second display device if an address associated with an updated portion of video image data received over the shared communication channel matches a second display device address.

34. (Previously Presented) A method comprising:
detecting, by a display device, an updated portion of video image data received over a shared communication channel;
updating a video memory of the display device if an address associated with the updated portion of the video image data matches a display device address; and
refreshing a displayed image in the display device from the video memory.

35. (Previously Presented) The method of claim 34, wherein the updated portion of video image data represents video image data that has changed since a previous transmission to the display device and excludes a substantial portion of the video image data that is unchanged since the previous transmission to the display device.

36. (Previously Presented) The method of claim 34, wherein prior to detecting the updated portion of video image data, the method comprises:
receiving the display device address assigned to the display device during display device initialization.

37. (Previously Presented) The method of claim 34, wherein updating the video memory of the display device is repeated at regular intervals.

38. (Previously Presented) The method of claim 34, wherein updating the video memory of the display device is repeated at irregular intervals.

39. (Previously Presented) A display device comprising:
a video memory;
an interface coupled to the video memory, the interface to detect an updated portion of video image data received over a shared communication channel and to update the video memory if an address associated with the updated portion of video image data matches a display device address;
and
a control circuit to refresh a display image in the displayed device from the video memory.

40. (Previously Presented) The display device of claim 39, wherein the interface is to receive the display device address assigned to the display device during display device initialization.

41. (Previously Presented) The display device of claim 39, wherein the display device includes one of a CRT and a flat panel.

42. (Previously Presented) The display device of claim 39, wherein the shared communication channel comprises one of a bus and a daisy chain.

43. (Previously Presented) The display device of claim 39, wherein the updated portion of video image data represents video image data that has changed since a previous transmission to the display device and excludes a substantial portion of the video image data that is unchanged since the previous transmission to the display device.